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Entomological News

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

OF THE

ACADEMY OF NATURAL SCIENCES

OF

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FEBRUARY, 1893.

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EXCHANGES

Not exceeding three lines free to subscribers.

☞ These notices are continued as long as our limited space will allow; the new ones are added at end of the column, and only when necessary those at the top (being longest in) are discontinued.

Coleoptera.—Price-lists wanted.—J. H. Bomberger, Box 76, Columbiana, O.

Lepidoptera.—Cocoons of *Attacus columbia* Smith to exchange for native lepidoptera, or for books on North American lepidoptera.—Robert H. Wolcott, Phi Delta Theta House, Ann Arbor, Mich.

Lepidoptera.—I am studying the Noctuid genera *Euclidia, Drasteria* and *Litosea*. Specimens bought, exchanged or determined.—M. V. Slingerland, Cornell Insectary, Ithaca, N. Y.

Lepidoptera.—Wanted to purchase cocoons and larvæ from different parts of U. S. State name and price.—E. J. Kruegeman, 54 May St., Lake View, Chicago, Ill.

Lepidoptera.—Wanted to exchange, papers on N. Am. Lepidoptera for Noctuidæ or Heterocera generally. Noctuidæ named for privilege of retaining desiderata.—John B. Smith, New Brunswick, N. J.

Coleoptera of N. Am. and Mexico wanted by purchase or exchange; large collection.—Fred. C. Bowditch, Tappan St., Brookline, Mass.

Lepidoptera.—Wanted, *Plusia balluca, metalliica* and *ampha;* also the Hydrœcias. Have some of the rarer eastern Noctuids for exchange.—Henry Bird, Rye, N. Y.

Coleoptera and **Hemiptera**, European and exotic, also postage stamps of Roumania, offered for American Hemiptera-Heteroptera unnamed.—A. L. Montandon, Strada Viilor filarete, Bucarest, Roumania.

Lepidoptera wanted, especially Geometridæ from all parts of the world; European given in exchange.—Chr. Schröder, Rendsburg, Germany.

Phryganidæ wanted; will exchange choice Coleoptera and Lepidoptera from Kansas, Colorado and New Mexico (Prof. F. H. Snow's collecting) for Caddice-flies, U. S. or exotic.—Vernon L. Kellogg, Univ. of Kansas Lawrence, Kansas.

Coleoptera.—Coleoptera to exchange for Coleoptera, Hymenoptera, Odonata, aquatic Hemiptera and entomological literature. Cicindelidæ, Cerambycidæ, Meloidæ, especially desired.—W. E. Snyder, Beaver Dam, Wis.

Lepidoptera.—Good exchange or cash given for specimens of *Nadata doubledayi* Pack. Also wanted any of the rarer Notodontidæ and Limacodidæ.—Harrison G. Dyar, 599 Broadway, New York City.

Coleoptera.—I wish to obtain Entomological literature in any language, especially that treating of Coleoptera and for works not in my possession will give good insects from the West and from Alaska, mostly Coleoptera.—H. F. Wickham, Iowa City, Iowa.

Lepidoptera.—I have for exchange *C. semidea, A. montanus, S. modesta* (imagos and pupæ), and other White Mountain material. The rarer Sphingidæ preferred.—R. Ottolengui, 115 Madison Ave., N. Y.

Lepidoptera (diurnal) of Iowa to exchange for species of same order not in my collection.—Henry G. Willard, Grinnell, Iowa.

Celeoptera.—Price-lists wanted.—Dr. E. B. Stephens, Plymouth, Mass.

Cynipidæ.—Named or unnamed Cynipidæ wanted by purchase or exchange. Always accompany the flies with their galls when possible.—C. P. Gillette, Ft. Collins, Col.

Orthoptera.—For exchange: Mexican Lepidoptera, unmounted, for literature, in any language, on N. A. Orthoptera. Also Indiana Orthoptera for others from any part of N. A.—W. S. Blatchley, Terre Haute, Ind.

Orthoptera of northeastern United States and provinces. Acrididæ and N. E. specimens particularly desired. Correspondence and exchanges.—Albert P. Morse, Wellesley College, Wellesley, Mass.

(Continued on third page of cover.)

ISAAC C. MARTINDALE.

ENTOMOLOGICAL NEWS

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ISAAC C. MARTINDALE.

Mr. Martindale died suddenly, from apoplexy, Tuesday, January 3rd, at his home, No. 322 Penn Street, Camden, N. J. He was born in Byberry, Philadelphia County, Pa., July 15, 1842. His parents were members of the Society of Friends, and his early education was acquired chiefly at schools under the control of Friends. His father was a descendant of John Martindell, who, early in the history of the country, settled in Bucks County, Pa. Many of the family have become prominent in the history of that part of Pennsylvania. On both sides his ancestry has shown literary ability, and this, early developed in the deceased, added to an inherent love for the study of Nature. He began the study of Natural History while on his father's farm, and, despite an almost insurmountable difficulty from lack of books, acquired considerable scientific knowledge. Geology, Mineralogy, Ornithology, Astronomy, Meteorology, Botany, Entomology and other branches of science received his attention, and were the study of years. Feb. 9, 1863, he was elected a corresponding member of the American Entomological Society, but it has only been within the last few years that Mr. Martindale has devoted his entire leisure time to Entomology, and more particu-

larly Lepidoptera. In former years his favorite study was Botany, and he ranked as one of the foremost botanists in the country. Much has been contributed by him on this subject to literature, and his collection of plants is regarded as the best in New Jersey, and with but few equals in the United States. His collection of Lepidoptera ranks very nearly the finest in America, and contains many beautiful and rare exotics not represented in other collections, as well as many exceedingly valuable native species. The collection is contained in about ten large cabinets all fashioned after the plan devised by himself. In the death of Mr. Martindale the Academy loses a most efficient member and a trustworthy officer. He was for sixteen years a member, and during part of the time was most active as Chairman of the Finance Committee. At the time of his death he was Treasurer of the Academy and Vice-Director of the Entomological Section. He was also a member of the American Philosophical Society, the Botanical Club, the Historical Society of Pennsylvania, and the Entomological Society "Iris" in Dresden, Germany. He was in the banking business, and was cashier of the Camden National Bank. He frequently made interesting communications on entomological subjects before the Entomological Section of the Academy, but wrote comparatively little on Entomology, his principal contributions being in ENTOMOLOGICAL NEWS, vol. i, p. 126, and "Canadian Entomologist," vol. xxiii, p. 174. Had he lived longer his services to Entomology would undoubtedly have been great, as he was a most enthusiastic and untiring worker, and what he has done in such a short time showed what he would have accomplished had he not been stricken at the comparatively early age of fifty years. He will be sadly missed by his friends and fellow members of the Academy and Entomological Section. He leaves a widow, a daughter and two sons.

Mr. WILLIAM BEUTENMULLER, of the American Museum of Natural History, Central Park, New York, is writing a monograph of the Lepidopterous family Aegeridæ, to be illustrated by colored plates, and he is desirous of receiving material and information on the subject.

ELEMENTARY ENTOMOLOGY.

LEPIDOPTERA–HETEROCERA (Moths).

By Prof. JOHN B. SMITH, New Brunswick, N. J.

The Saturniidæ and Ceratocampidæ differ from all the other of our Bombyces by having the antennal joints unusually long, and furnished with two pectinations to each side. Each segment, therefore, bears four branches or joints. This structure is not paralleled elsewhere in the Lepidoptera, so far as my knowledge extends, except in the aberrant Sphingid genus *Cressonia*. Its distinctive character gives it an absolute systematic value, and by its aid all members of these families may be readily recognized. Between themselves, the Saturniidæ and Ceratocampidæ differ, primarily, in that the former have the antennal pectinations extending to the tip, while in the latter they extend only a little beyond the middle.

In the Saturniidæ the head is small, and the ocelli and tongue are wanting. The venation is quite simple, and usually the primaries have ten veins only; the missing veins belonging to the sub-costal series. In the fore wings there is one internal vein, which may or may not have a small fork at the base. The cell extends to the middle of the wing or beyond it, and the veins are well separated. The secondaries lack all trace of a frenelum in both sexes; the costal vein is free from the base, and there are two internal veins, the inner very feeble and very close to the internal margin; vein five belongs to the sub-costal series. The legs are short and very hairy, the tarsi very feebly spinulose. The little epiphysis on the underside of the fore tibia is distinctly present.

It is to this family that our American "silk worms" are referable; and the moths are the giants among our Bombyces; expanding in some instances six inches or more.

Two very well separated sub-families are recognizable: the Attacinæ and Saturniinæ, recognizable primarily by the fact that in the Attacinæ the median cell on both wings is open, while in the Saturniinæ it is closed by a distinct cross-vein. Other differences exist: in the Attacinæ the antennal development is most perfect, the pectinations being as complete, though smaller, in the female than in the male. The wings are very broad, the pri-

maries with a rounded apex, below which there is a variably distinct excision, in some exotic species so strongly marked as to make the wings distinctly falcate. As a whole, the wing outline is extremely graceful, no sudden or sharp angles presenting anywhere. In the cocoons there is a decided tendency to a doubling, most marked in *cecropia*, but obvious in all the species known to me. They also are attached to the plants on which the insects feed, in a majority of the cases, though this feature varies. Those of *columbia* and *cecropia* are often, if not usually, attached to twigs or branches their full length; those of *cynthia* and *promethea* are enveloped by a leaf and attached by a pedicel to the twig; and those of *angulifera* are not attached in any way, but fall to the ground with the leaves. In the Saturniinæ we have a very decided difference in wing form. The apex of primaries is distinctly pointed or angular, and the outer margin, though it may be excised, is never gracefully swung. Everywhere the angles are obtrusive, and there is a clumsy appearance as a rule. In *luna* this is much less noticeable, owing to the handsome tails. The antennal development is much less perfect, and we find, in the females, first a short ending of one pair of pectinations, then the disappearance of one pair and the shortening of the other, and finally the pectinations disappear entirely. The number and comparative length of the segments is not changed, however, and in the males the typical family structure is distinct in all cases, though the pectinations may not be equally long. The cocoons are usually distinctly single, and, as usually, drop to the ground with the leaves; if, indeed, the larva does not descend to the ground to pupate.

The most obvious character of the Ceratocampidæ has already been stated. It is found in the fact that the antennal pectinations extend to the middle only. In the female the pectinations are very short, or the antennæ are simple. The venation is, in its main features, not unlike that of the Saturniidæ, but we notice a very obvious tendency to some of the following families in the very decided shortening of the median cell, and a corresponding increase in the length of the veins arising from it. This feature is distinctive of a small group of families, and associates the Ceratocampidæ much more nearly with the Lasiocampidæ than with the Saturniidæ. Vein five, of the primaries, while much nearer to the subcostal than to the median series, usually arises

from the cross-vein, and occasionally we note a very distinctive tendency toward a division of the cell itself, by a distinct fold. The head structure is not unlike that of the Saturniidæ, and the same may be said of the leg structure; the armature of the tarsi being usually sparse. On the fore tibiæ of some of the species the epiphyses are enormously developed, and force the question of their purpose quite prominently upon the student. In the method of pupation the species of this family differ entirely from the Saturniidæ in that they all form naked, subterranean pupæ.

Under the term "Bombycidæ," my list contains a miscellaneous aggregation of forms which did not fit into the families that I had more definitely limited, and, as it stands, this "family" is incapable of definition. It is, however, quite easy to divide it, and we get first, the family Hemileucidæ, containing the genera *Pseudohazis* and *Hemileuca* as they stand in the list. In venation this family corresponds very closely with the family Saturniidæ, and stands much nearer to it, indeed, than the Ceratocampidæ; not only in this respect, but in the wing form and in the method of pupation. The family differs primarily in the structure of the antennæ, in which there is only a single pectination to each side of each joint. As the number of pectinations is as great or greater than in Saturniidæ, it necessitates at least double the number of joints in an antennæ of the same length, and these joints are quite different in form. We have thus an absolute, sharply-limited character in the relative number of joints in antennæ of the same length. The head structure also is quite different, influencing the location of the antennæ. In the Saturniidæ the eyes are comparatively large and extend to the vertex, the antennal cavities touch the margin of the eye, and are separated by less than their own diameter, even in the female. In the Hemileucidæ, on the contrary, the eyes are much smaller, much more widely separated and do not reach the vertex. The antennal cavities are situated on a prominence, do not touch the margin of the eye, and are separated by nearly twice their diameter. So different, indeed, is the head structure, that if we attribute as much value to its modifications as Dr. Packard has been inclined to do, we cannot find more widely distinct families. The legs are short and hairy, the spurs obsolete, except on the posterior tibiæ, but the tarsal spinulation is distinct, and the tarsal claws are unusually long. The fore tibiæ are peculiar; they are

furnished at the tip with a distinct claw, which is an unusual character in this series, and they lack entirely the epiphysis, which is an all but universal character in the Macroheterocera, and this serves to isolate the family from all the other related Bombyces examined by me. There are other differences, in thoracic structure and elsewhere, which this is scarcely the place to describe, but enough has been shown to make it desirable that Mr. Dyar's sentence on p. 35 of this volume: "The genera *Pseudohazis* and *Hemileuca* undoubtedly belong to the Saturniidæ," should be regarded as an expression of opinion and not as a statement of fact. The use of the term "undoubtedly" is unfortunate in any case, for we really know too little absolutely to make any such definite assertions. I am aware that it would not be difficult to find equally positive assertions made by myself in times past, when I thought I knew very much more than I do now; at that time no one else seems to have had any definite information concerning the wealth of knowledge that we did not possess. It is certain that I did not then realize that all that was printed in the books could not be implicitly relied upon.

NOTE.—Some unfortunate typograpical errors crept into the January instalment of this paper; in one case entirely reversing my intended statement. On p. 5, line 3, omit *but* between *certain* and *that*; line 16, after *genus* insert *which*; line 25, *lengthily* insert *often*.

———o———

NOTES ON THE ENTOMOLOGY OF COLORADO.—II.

By T. D. A. COCKERELL, Kingston, Jamaica.

DELTA.

The northern border of the county is elevated, but rapidly descending as one goes southward, the zones of vegetation recorded on p. 202 are grassed, and the Gunnison River is reached at quite a low level. I crossed the county in September and October, from the Grand Mesa down the valley of Surface Creek and across the plain to Montrose. We camped for a few days on Surface Creek at about 8,500 feet altitude, where the zones of Spruce and Quaking Asp intermingled. Here the plants were characteristic of the mid-alpine region, such species as *Fragaria vesca*, *Epilobium angustifolium*, *Urtica gracilis*, *Rubus strigosus*

Troximon aurantiacum, *T. glaucum*, *Mertensia sibirica*, *Campanula rotundifolia*, *Aconitum columbianum*, etc., being observed. The mollusca were equally characteristic, including *Patula Cooperi*, *Conulus fulvus*, *Limnœa humilis*, *Pupa blandi* and others. The insects corresponded; on September 26th, I saw *Vanessa antiopa;* on September 30th, *Vespa maculata;* and at various times species of *Grapta*, *Colias*, *Lithobius*, *Geophilus*, etc. A marten was shot by one of our party, and a *Pulex* found parasitic upon it.

On September 30th we moved a few miles further down the valley, and at this camp I took a wasp, *Vespa arenaria* Fab.; two beetles, *Platycerus sepressus* Lec. ♀ (under a log) and *Necrophorus vespilloides* Hbst. (flying by day), and a *Vanessa Milbertii*. I have also a note of *Hippodamia 5-signata* Kirb. on Surface Creek, and *Pterostichus protractus* Lec., Delta County, the locality not exactly noted. *P. protractus* is recorded in the Wheeler Report from Fort Garland and the Roaring Fork, and so appears to be of wide distribution in Colorado, although I did not find it in Custer County. Colorado, as a whole, seems to contain comparatively few species of *Pterostichus* (though two or three are abundant), but plenty of *Amara*, thus:—

	Colo. (ms. list)	New Jersey (J. B. Smith.)	British Is. (Fowler & Matthews.)
Pterostichus	8	19	22
Amara	20	16	26

MESA, N. E.

In September, I crossed the northern border of the county close to the Mam Mountains, and traveled by way of Buzzard Creek and Plateau Creek to the Grand Mesa. This region is mid-alpine, but descending Plateau Creek we should soon meet with sub-alpine features, and even near Eagalite, where we camped, they were becoming quite marked. It will be convenient to group the notes under three districts:

(1) **Buzzard Creek District.**—The divide between North Mam Creek and Buzzard Creek is not so high but that the Scrub Oak grows there, being ordinary mid-alpine. Elk (*Cervus canadensis*) and black-tailed deer (*C. macrotis*) were observed on the Mam Mountains. At our camp near the foot of the Mam Moun-

tains, by a stream which runs into Buzzard Creek, *Vanessa antiopa* was common; of Hymenoptera, *Augochlora pura* Say was taken on September 15th, and *Apathus insularis* Sm. on September 17th; of Coleoptera, *Tachyporus jocosus* Say was found on September 14th, and *Nebria trifaria* Lec. (at the foot of the Mam Mountain) on September 16th. Species of *Geophilus* and *Lithobius* were also noticed.

On September 18th we camped on Buzzard Creek itself. I wrote at the time: "Buzzard Creek is a pretty stream, bordered with Willows,—and the surrounding country consists of low rounded hills, covered with gray *Artemisia*-brush, Oak-brush (now brilliantly red), and here and there patches of Quaking Aspen turning yellow." At this locality *Vanessa antiopa* was again met with; also *Culex* sp. and *Pœderus* sp., and in the creek plenty of the cases of *Helicopsyche* on stones. Two ducks shot were found to have eaten numbers of the latter.

Calathus ingratus Dej. was taken near Buzzard Creek.

(2) **Plateau Creek District.**—It is a good indication of the sub-alpine region when the creek bottoms begin to be filled with the narrow-leafed cottonwood, *Populus angustifolia.* This was the case near Eagalite (is this a corruption of éagalité?), where we camped, and other indications of a warmer climate were not wanting. The sand by the creek was alive with lizards of two species (*Uta ornata* Baird and Girard, and *Cremidophorus sexlineatus* L.), while tiger beetles (*Cicindela 12-guttata* Dej.) were nnumerable, taking flight at the slightest alarm. At night, there was a constant chirping of crickets. The other insects noted were *Vanessa antiopa*, *Catocala* sp., *Eupithecia* sp., *Trechus micans* Lec. (*chalybeus* Mann.), *Crabro odyneroides* Cr., *Chrysis* sp.; and three Orthoptera, *Trimerotropis vinculata* Scudd., *Dissoteira carolina* L., and *Acridium shoshone* Thos. Rose leaves were noticed to have been cut by some *Megachile.* The date of these observations was Sept. 19 and 20, 1887.

(3) **Grand Mesa District.**—On the north slope of the Grand Mesa a specimen of *Hemileuca juno* var. *diana* Pack., was taken on September 20th. We camped on the Mesa, near Clear Water Creek, at two different places, altitude about 9,800 feet. This is, of course, high mid-alpine. Some of the characteristic plants are *Achillea millefolium*, *Graphalium Sprengelii*, *Gentiana serrata*, *Galium boreale*, *Castilleia miniata* (form with rose-pink

flowers), *Ranunculus aquatilis* var. *stagnatilis*, *Caltha leptosepala*, etc. It is the zone of Spruce (*Picea Engelmanni*), but Quaking Asps are to be seen in diminished numbers. Three beetles collected proved to be *Amara terrestris* Lec., *Pterostichus longulus* Lec. and *Melanophila atropurpurea* Say. *Musca* sp. was observed, and species of *Lithobius* and *Julus*. Various things were collected in alcohol, but never got identified, with the exception of *Phalangodes robustus* Packard, concerning which see "Canadian Entomologist," July, 1889. A saw-fly larva found on September 22d, was 14 mm. long, reddish yellow, with a dark dorsal line, last segment purplish. It is perhaps identical with one I found on rose in Custer County.

A CLAIM THAT AN ANCIENT BEETLE HAS BEEN FOUND ALIVE IN IRON.—Our fellow-citizen, Z. T. White, is the owner of what we believe to be the most interesting insect and mineral specimen in existence. Some months ago Mr. White was presented with a specimen taken from considerable depth in the Longfellow mine of Clifton, Ariz. When the specimen in question was fractured, a beetle of dull reddish gray was disclosed, surrounded by a closely-fitting mold of iron ore; in fact, the beetle lay in state as perfect as in life, in the sarcophagus of iron. Naturally, very much impressed with his acquired property, Mr. White hastened to envelop it in a piece of cloth, with the view of conveying it to his cabinet. On his way, however, he had occasion to examine the interesting specimen, and his surprise may be better imagined than described when he perceived a young beetle slowly emerging from its dead parent's body, and in every characteristic resembling it, barring the fact that it was smaller. At the time Mr. White called the attention of the writer to the fact, the young beetle was placed under a glass by its owner. It continued to prosper and increase in dimensions and lived for five whole months. The specimen, the insect in its cyst of ore and the younger insect generated in a prehistoric period to be born in the nineteenth century, are now in the *Bullion* office awaiting Judge J. F. Crosby, of this city, who proposes to present them, with the compliments of our fellow-citizen, Mr. White, to a prominent scientific association of the Atlantic slope. Fossil insects are common; beetles and other insects inclosed in amber and other compounds are frequently met with, but geology in all these cases gives an explanation to account for the appearance of organic matter, but in this case there is no plausible pretext to account for the insects enveloped in a matrix of iron and found far beneath the surface, no other traces of organic life being present. It is almost beyond credence —*El Paso Bullion.*

ENTOMOLOGICAL NEWS.

Published monthly (except July and August), by the Entomological Section of the Academy of Natural Sciences, of Philadelphia, with the endorsement of the American Entomological Society. It will contain not less than 240 pages per annum. It will maintain no free list whatever, but will leave no measure untried to make it a necessity to every student of insect life, so that its very moderate annual subscription may be considered well spent.

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☞ All remittances should be addressed to E. T. Cresson, Treasurer, P. O. Box 248, Philadelphia, Pa.; all other communications to the Editor of ENTOMOLOGICAL NEWS, Academy of Natural Sciences, Logan Square, Philadelphia, Pa.

PHILADELPHIA, PA., FEBRUARY, 1893.

IT has been suggested that we should publish more reports of captures and local lists, after the manner of the English entomological journals. We are perfectly willing to do so, and trust our readers and subscribers who think such notes would be interesting, will send a supply for each month. This has been done to a very limited extent in entomological journals published on this side of the "great pond," and the reason is not far to seek. The conditions of affairs here as compared, for instance, with England are very different; we have an area of 3,605,000 square miles in which we collect, and the area of England and Wales is but 58,000 square miles. Moreover, there are perhaps fifty entomologists in England to each one in the United States. We also have many more species to look after, and it is a matter of very small moment to an American collector if he takes a common butterfly, but our English friend immediately reports it to his journal. On looking over an English entomological journal one will find it largely made up of notes of captures, local lists, items of interest to collectors, and similar affairs. Perhaps a number of people will report captures of *Colias hyale* and *Colias edusa;* now, if we should do the same, and every bug hunter should report the capture of *Colias philodice* in our immense territory, it would take up almost a whole issue of the NEWS to contain it all. There is a happy medium in everything, and while we do not expect to see these local reports carried out to the same extent as abroad, on account of the conditions being so very different, yet we might have very much more of it done here in America, so send in your reports and we will do the rest.

PICTURES for the album of the American Entomological Society have been received from William Beutenmüller, W. H. Edwards, H. H. Lyman, Dr. F. W. Goding, James Angus, Dr. S. W. Williston and E. B. Southwick. We still want all we can get.

DEPARTMENT OF ECONOMIC ENTOMOLOGY.

Edited by Prof. JOHN B. SMITH, Sc. D., New Brunswick, N. J.

Common Injurious Insects of Kansas, is the title of a 126-page pamphlet, by Vernon L. Kellogg, M. S., issued at the University of Kansas. It is prefaced by a very brief and very general account of the life-history of an insect, and the division into biting and sucking forms is made. Four pages treat of the more usual insecticides and their range, and less than two pages are devoted to "spraying and dusting." Then follow the accounts of the injurious insects, grouped under the crops attacked by them and in the order of their importance; thus the Chinch bug appropriately heads the list.

The treatment of each species is necessarily brief, and the remedies to be adopted are also very briefly mentioned. In all, fifty-nine species are described, and these are illustrated by sixty-one figures. To each account "Kansas Notes" are added, referring to observations made in that State. The pamphlet will be very useful, no doubt, and forms a convenient little book for farmers and fruit growers to have about. It has one disadvantage, common to all publications of that character, it becomes antiquated in large part with such astonishing rapidity. Already, when just off the press, I note that, for some insects, better and more practical or effective means have been recommended than those mentioned in the book; and yet I have no doubt it represents in most cases the state of our knowledge when it was dated, less than three months ago. Of the illustrations, a fair proportion are the well known and always excellent figures from Dr. Riley's Reports; a few are from other sources, but perhaps the majority are original, or are re-drawn. Line has been used almost exclusively, and the result is not good in most cases. All the re-drawn figures are inferior to the originals, and the new figures, while recognizable in most cases, leave much to be desired.

Digestive System of Orthoptera.—Some words in Mr. Kellogg's introductory remarks give food for thought. He says: "For the intelligent application of insecticides (insect-killing substances), some little should be known of the general economy of insect life, and that little may be briefly told." But is this really true? Can there be any really intelligent application of insecticides without a great deal more knowledge than can be "briefly told;" and after all, do the teachers themselves know exactly what to do in all cases; or do they always know exactly how insecticides act, and why they will act in one case and not in another. Why hellebore, for instance, is specific for one series of insects and absolutely ineffective as against others equally exposed and without greater apparent means of resistance. There comes in, also, a very important factor: the determination of the author of the mischief. However easy this may be to the trained observer, it is sometimes very difficult to one that does not

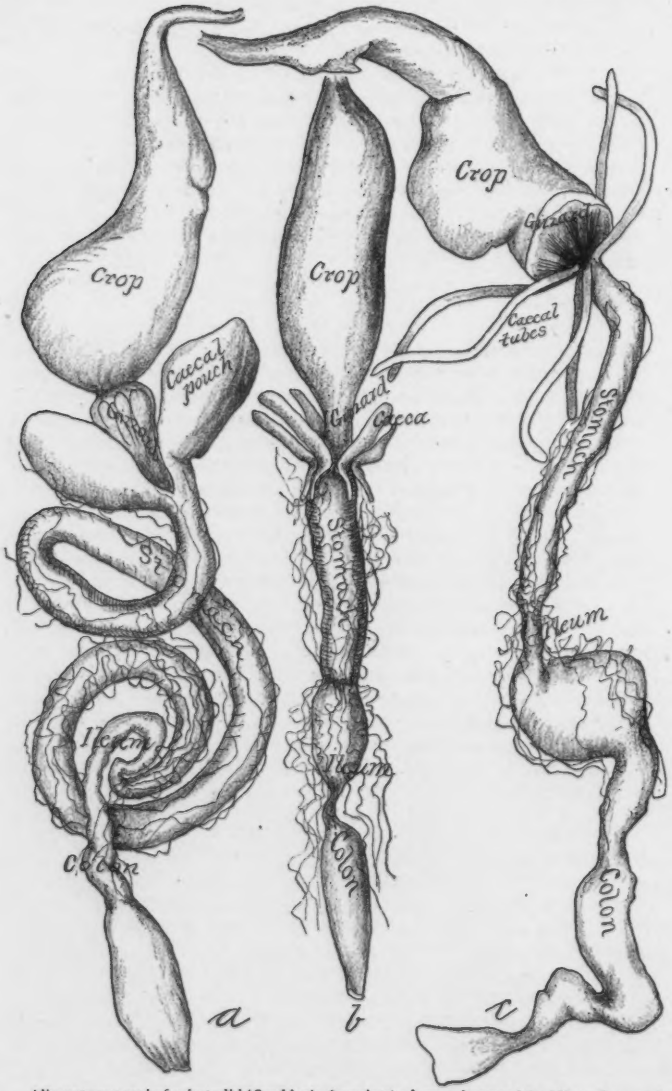
have a special knowledge, even if more than usually intelligent or otherwise well educated. I have not infrequently received insects with a sample of injury supposed to have been done by them, which I knew at once they could not have caused. The true depredator may be inconspicuous, or a nocturnal prowler, while a common, noisy day bird is charged with the mischief. A very good illustration of this feature may be found in the case of the Orthoptera frequenting cranberry bogs. For years past the grasshoppers (Acrididæ) have been charged with the injury, though I have always attributed it to the katydids (Locustidæ). The growers have always contended that there were few or no katydids and any number of grasshoppers, and they *must* be the depredators. Now it is quite true that grasshoppers are very much *en evidence* on many bogs, and their clumsy jumpings and noisy flight attract so much attention that the species of *Scudderia* with their noiseless flight, thin, almost transparent wings and green color, are entirely overlooked. In several cases, after a grower had positively declared that there were no katydids on his bog, I caught several for him within a small radius, to his intense surprise. The next objection was, suppose there are a few katydids, how can they do all this injury; they may eat berries, but so do the grasshoppers. On some bogs it would have been possible to answer that if every grasshopper ate only two berries a week, they would have taken every berry on the bog in one week, but the true answer was found in the structure of the insects themselves, and in the capacity of the digestive system. On page 50 will be found figures of the digestive systems of a katydid, *Scudderia furculata*, a grasshopper, *Acridium obscurum*, and a roach, *Blatta orientalis;* the latter for a comparison merely. The differences are quite striking, and give the katydid a capacity equaling three *Acridium obscurum*, or eight *Melanoplus femur-rubrum*. In the *Acridium*, in *Melanoplus*, and in all other of the grasshoppers examined by me, the crop is quite a thick-walled structure, with grinding ridges, teeth and wrinklings on the inner surface. There is no distinct gizzard. It may be well to say that there is an extremely short œsophagus, and that the crop lies largely in the thoracic cavity. The cæca consist of six purse-like upward extensions with a short tail-like downward appendix to each. The stomach, or chylific ventricle is shorter and of a smaller diameter than the crop, and holds about half as much. The ileum and colon together do not equal the stomach in capacity. We have here a very simple type; an almost straight tube from one end of the body to the other, divided into specialized regions. The katydid structure is quite dissimilar. We have, first, a very long œsophagus extending through the thoracic cavity into the abdomen, where it enlarges to a crop which is a thin membranous sac, capable of great distension. This merges into a distinct gizzard, which has a complicated grinding apparatus and thence the food passes to a very long stomach, at the mouth of which the cæca are represented by two large pouches, also distended with food. The stomach forms two large coils, and, with the cæcal pouches, holds at least twice as much as the

crop. The form of the head, of the jaws, and of the insect as a whole, all point to one result only: that katydids. and not grasshoppers, do the injury complained of on cranberry bogs.

Now, all these facts in insect anatomy I believe the farmer ought to know, or should at least have the opportunity of knowing. It forms part of that body of knowledge which is necessary to be able to decide, promptly and safely, which is the true injurious insect first, and how it may be killed afterward. I believe very decidedly that beside a general knowledge of the transformation of insects, the farmer needs quite a definite knowledge of insect anatomy and physiology, and, so far as I am able to do so, I propose to put such knowledge within reach, in New Jersey at least.

How a Bee Fights.—An observer writes in the *Chicago Tribune*, that he is satisfied that there is just as much rivalry between humming birds and bees in their quest for honey as there is between members of the human race in their struggle for the good things of life, and describes a recent quarrel that he saw in a Portland, Me., garden, where a humming bird with an angry dash expressed its disapproval of the presence of a big bumble-bee in the same tree. The usually pugnacious bee incontinently fled, but he did not leave the tree. He dashed back and forth among the branches and white blossoms, the humming bird in close pursuit. Where will you find another pair that could dodge and dare equal to these? They were like flashes of light, yet the pursuer followed the track of the pursued, turning when the bee turned. In short, the bird and the bee controlled the movements of their bodies more quickly and more accurately than he could control the movements of his eyes. The chase was all over in half the time that it has taken to tell it, but the excitement of a pack of hounds after a fox was no greater. The bee escaped, the bird giving up the whole chase and alighting on a twig. It couldn't have been chasing the bee for food, and there is no possible explanation of its unprovoked attack, except that it wished to have all the honey itself.

Entomological Society of London, May 6, 1892.—The secretary read a letter which Lord Walsingham had received from Sir Arthur Blackwood, the secretary of the post-office, in answer to the memorial, which, on behalf of the society, had been submitted to the Postmaster-General, asking that small parcels containing scientific specimens might be sent to places abroad at the reduced rate of postage applicable to packets of *bona fide* trade patterns and samples. The letter intimated that, so far as the English post-office was concerned, scientific specimens sent by sample post to places abroad would not be stopped in future. [This is not new, but will probably be useful for American entomologists to know, especially those who exchange with correspondents in England.]



Alimentary canal of *a*, katydid (*Scudderia furculata*); *b*, grasshopper (*Acridium obscurum*); *c*, cockroach (*Blatta orientalis*), much enlarged. All the parts of the tract are named, except the irregular threads surrounding the stomach, which are the Malpighian vessels. They are much more numerous than shown in the figure, and form, in nature, a complete network around the organ.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

[The Conductors of ENTOMOLOGICAL NEWS solicit, and will thankfully receive items of news, likely to interest its readers, from any source. The author's name will be given in each case for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, three weeks before date of issue. This should be remembered in sending special or important matter for certain issue. Owing to low subscription rate, "extras" will be charged for, and when they are wanted, it should be so stated on the MS. along with the number desired. The receipt of all papers will be acknowledged.—ED.

A CORRECTION.—Mr. Dyar's note in January NEWS concerning a moth of which he speaks as *Ceruridia Slossonii* Pack., is misleading, and requires correction. There is as yet no such insect as *Ceruridia Slossonii* Pack. A moth in my collection has a label bearing, in my own handwriting, the above name proposed for it by Dr. A. S. Packard. No description of this moth has been published. I stated these facts when I showed the insect to Mr. Dyar, but he has apparently forgotten them.

ANNIE TRUMBULL SLOSSON.

WRITING in regard to a recent article in the NEWS by Prof. J. B. Smith on American Noctuidæ, Mr. J. W. Tutt, of London, England, says: "The value of your photographic plates is unquestionable, and it enables us who cannot see the type specimens in your collections to form an idea of the moths you describe. With regard to fig. 5, in the first row, the species is undoubtedly our European *Hydræcia micacea* Esp., and the description suits our species exactly. But this is a most variable species in England, and varies from pale yellowish with very faint markings through banded specimens to dark brown (*vide* British Noctuæ and their varieties, vol. i, pp. 64–66), some of the specimens being bright rosy-red; in fact, the species is called 'the rosy rustic.' In naming new species, care should be taken to refer to such well-known European species as this undoubtedly is."

BEE STINGS AND RHEUMATISM.—I some time ago came across a few articles having reference to bee stings as a cure for rheumatism. The subject had passed from my mind until just recently, when a particular friend of mine, who has suffered from this annoying complaint, was stating his case to me I at once remembered what I had read, and told him about it. His curiosity being aroused, he asked to see the letters, and after careful perusal of the same he came to my apiary to try the effect of the remedy. My friend is an ex-police sergeant, who has suffered acutely for years from rheumatism, and passed through the hands of several medical men, and spent seasons at various convalescent homes, undergoing va-

rious kinds of treatment, but all to no purpose. However, on Monday, 11th of July last, he came to see me, suffering from severe pain in his right elbow and right ankle. With the help of my bees I gave him eight stings, three upon the elbow and five upon the ankle. When he came he could not lift his arm, and it was with very great difficulty that he managed to walk a distance of two miles to my place, but twenty minutes after being stung, he could work his arm about as freely as if he had never had rheumatism in his life, and he walked away like a two-year-old. —*British Bee Journal* August, 1892. See also ENT. NEWS vol. i, foot of page 143.

A FRIENDLY BUTTERFLY.—On a picnic some miles east of Bangor in 1890 this very sociable *Vanessa antiopa* made my acquaintance, one not soon to be forgotten by me. It was a fresh and bright one, and his aim seemed pleasure alone, he acted so lively and pleased. His continued attentions to me as I carelessly swung my net beside the road at last induced me to meet him half way in friendliness. Even after catching him a few times and then freeing him he alighted on the net, on my straw hat, and, finally in contentment, on my left shoulder. With my coat off in the heat it seemed to me my white shirt might be the attraction. Thinking my children would be amused, I walked back to the stream and called them up to wonder in their turn. Next we all went further to our lunch place under a big Pine where were others of the party. There for some time he kept his place, apparently much pleased. As time passed I at last began to test the power of attraction, actually driving him with net far up into the tree when he again tried to come back, but was probably scared by some one else at last. Now, the time was long, the distance walked considerable, and his various manœuvres were quite multifarious. His actions showed pleasure distinctly.—F. A. EDDY, Bangor, Me.

ON THE MORPHOLOGY AND PHYLOGENY OF INSECTS.—Under this title the "Annals and Magazine of Natural History" for December, 1892, contains a translation of a portion of a paper by N. Cholodkovsky, on the embryonal development of *Phyllodromia* (*Blatta*) *germanica*, published in the "Mémoires de l'Academie Impériale des Sciences de St. Pétersbourg" (7), xxxviii, No. 5, 1891. As set forth in this translation, M. Cholodkovsky advances "the following main theses:—

1. The head of Insects contains more than four protozonites, probably six, of which one is pre-oral, but the rest are post-oral.

2. The antennæ of Insects belong to the first post-oral segment and are entirely homologous with the remaining ventral extremities. They do not correspond to the antennæ of *Peripatus*, but probably to the chelicerae of spiders, and perhaps to the second pair of antennæ of Crustacea.

3. Since the possibility that a number of segments in the germinal streak of different Arthropods have disappeared is not excluded, a homology of the mouth-parts of the different classes of Arthropods cannot at present be set up.

4. The abdominal appendages of the Insectan germinal streak (including the cerci) are homologous with the thoracic legs. Herein it makes no difference whether these appendages are attached to the middle, at the side, at the front or hind margin (are meso-, pleuro-, pro-, or opisthostatic in the terminology of Graber), provided only that their cavity is immediately continuous with that of the somite to which they belong. The fact that the abdominal appendages usually remain unsegmented in nowise tends to show that they are not of the nature of limbs, since, for instance, the mandibles also are unsegmented.*

5. Many of the abdominal appendages of larvæ and perfect Insects are homologous with the thoracic legs, even when they are secondary in ontogeny.

6. The primitive function of the first pair of the abdominal appendages was ambulatory, as also that of the remaining appendages. The ancestors of the Insects were therefore undoubtedly homopod, not heteropod.

7. The many-legged Insect larvæ are to be derived from the six-legged just as little as are, conversely, the hexapod larvæ from the polypod; both forms developed independently of one another.

8. The embryonic envelopes of the Insects probably correspond to the remains of a Trochosphere."

With regard to the origin of Insects, M. Cholodkovsky believes that existing knowledge "seems to decide the question still more definitely in favor of the derivation of the Insects from homo- and polypod and, probably, *Scolopendrella*-like ancestors. Even Graber . . . . considers it probable that the ancestors of Insects were myriapod-like. . . . . If, however, we weigh the great difference between the Crustacea on the one hand, and the rest of the Arthropods on the other, a close relationship between Insects and Crustaceans appears simply impossible. The *Nauplius*-form of larva, an exclusively Crustacean possession, the remarkable resemblance in embryonic development between Insects and *Peripatus*, and the constitution of the respiratory and excretory organs, are facts which all compel us to conclude that the Arthropods are at least diphyletic in origin. The Crustacea, indeed, are to be derived from marine Annelids, which in the course of their development passed through the Trochosphere stage (which in the Crustacean development became transformed into that of the *Nauplius*), while for the ancestors of the Tracheata we must look to terrestrial, or fresh-water Annelids, more of the Oligochæte type."

VENTURESOME INSECTS.—The notes, in late numbers of the NEWS, by Messrs. Webster, Calvert and Cross, on "venturesome insects," remind me that I have made the same observations in regard to all the species of the genus *Grapta*, that I am familiar with. When collecting, if I fail to secure a specimen at first trial, I always stand still and the insect is sure to alight on the same, or near the same spot. I remember one *Grapta*

* "Whether the segmented branchial filaments of *Sisyra* and *Sialis* belong to this category is doubtful, but can only be decided by embryological investigations."

comma at Connellsville, Pa., that alighted every afternoon on a small Almond tree. I repeatedly attempted to capture it, but it was too wary for me. I am quite certain it was the same insect, and it would alight not only on the same tree, but on the same spot. There was no food near that I could see. I also have seen a case of "attempted suicide." It was at the Cucumber Falls, Ohio Pyle, Pa. The sun was shining brightly on the water at the time, and I was standing at the foot of the falls. I saw a large *Papilio turnus* hover before the water and then fly directly into it. It was dashed back by the force of the water, but, as soon as it regained its balance, returned to the charge. This time it was hurled to my feet, and now adorns my collection. I would suggest that the sunlight reflected from the water attracted the insect.—JAMES M. PHILLIPS.

THE following has been sent us by one who has had reason to regret that his correspondents had more faith in the tender handling of the mails than the results proved desirable. The remarks are equally applicable to all orders of insects. To the items we might add—enclose stamps not only to pay for the return of the box, but the return of the letter. This may seem a small matter, but to expect one to give time and labor for nothing and to pay for the privilege is at least unreasonable.

TEN COMMANDMENTS

which every coleopterist, who sends specimens for names, should always carefully consider:

1. Take a nice little wooden box with good cork lining, at least a quarter of an inch thick.
2. Use Klaeger pins and stick them deep into the cork to prevent vibration.
3. Fasten the specimens or papers underneath with a little gum to prevent them from turning around the pin.
4. Don't put the specimens too close—to prevent their injuring each other.
5. See that the specimens are clean and perfect.
6. Put the box in an outer box of strong pasteboard, but leave room enough between the two boxes to be stuffed with cotton or horsehair, etc.
7. Instead of an outer box, a thick layer of cotton may be used.
8. Write on the outside of the bundle the address—clear and legible.
9. If the box is to be returned, put the return postage in the accompanying letter.
10. Acknowledge the receipt of the box.

(Any neglect of these rules will probably be disastrous.)

HENRY ULKE.

THE locality where the butterflies were taken, which was omitted in the article in last issue of NEWS, by William L. W. Field, was Guilford, Conn.

Identification of Insects (Imagos) for Subscribers.

Specimens will be named under the following conditions: 1st, The number of specimens to be unlimited for each sending; 2d, The sender to pay all expenses of transportation and the insects to become the property of the American Entomological Society; 3d, Each specimen must have a number attached so that the identification may be announced accordingly. Exotic species named only by special arrangement with the Editor, who should be consulted before specimens are sent. Send a 2 cent stamp with all insects for return of names. Before sending insects for identification, read page 41, Vol. III. Address all packages to ENTOMOLOGICAL NEWS, Academy Natural Sciences, Logan Square, Philadelphia, Pa.

Entomological Literature.

COMPTES RENDUS. L'ACADEMIE DES SCIENCES, Paris, Nov. 28, 1892.—On a nervous ganglion in the feet of *Phalangium opilio*, M. Gaubert. Researches on the colors of some insects, A. B. Griffiths.

THE ANNALS AND MAGAZINE OF NATURAL HISTORY (6), x, 60, London, December, 1892.—On the development of the Pedipalpi, Dr. A. Strubell (transl. Zool. Anz. 1892, No. 385, 386). On the morphology and phylogeny of insects, N. Cholodkovsky (transl. Mem. Acad. St. Petersb. 1891).

PROCEEDINGS OF THE ROYAL SOCIETY OF EDINBURGH, xviii, 1892.—On the blood of the Invertebrata, Dr. A. B. Griffiths.

THE ENTOMOLOGIST, London, December, 1892.—The emergence of the *Ceruras*, Dr. T. A. Chapman. Indoor light [for night collecting], Major J. N. Still. Numerous additional records of *Colias edusa*, *C. hyale*.

THE CANADIAN ENTOMOLOGIST, London, Ont., December, 1892.—Notes on Coleoptera, xi, Dr. J. Hamilton. A preliminary grouping of the described species of *Sapromyza* of North America, with one new species, C. H. T. Townsend. Preliminary remarks on some North American species of *Halisidota* Hüb., H. G. Dyar. Partial preparatory stages of *Catocala illecta* Walker, with notes, G. H. French. Discovery of the genus *Cratæpus* Foerster in America, and the description of a new species, W. H. Ashmead. *Cnicus discolor* as an insect trap, W. S. Blatchley. Notes on the habits of *Siphonophora cucurbitæ* Middleton, F. M. Webster. Butterflies on Grandfather Mountain, North Carolina, T. L. Mead. A new genus of Diptera allied to *Rhaphiomidas*, D. W. Coquillett.

BIOLOGISCHES CENTRALBLATT. ERLANGEN, Nov. 15, 1892.—Contribution to the knowledge of the anatomical structure of the reproductive organs of the Galeodidæ, A. Birula.

SCIENCE, New York, Dec. 16, 1892.—Some entomological factors in the problem of country fences, F. M. Webster. How are young spiders fed? J. W. Sanborn.

RECUEIL ZOOLOGIQUE SUISSE, v, 4, Geneva-Bale, Oct. 5, 1892.—Anatomy and habits of *Encyrtus fuscicollis*, E. Bugnion (cont.), 3 plates.

JOURNAL OF THE TRINIDAD FIELD NATURALISTS' CLUB. Port of Spain, Trin., December, 1892.—*Oecodoma cephalotes*, II, J. E. Tanner. Bite of the Tarantula (*Mygale*) spider, C. W. Meaden.

ACTES DE LA SOCIETE SCIENTIFIQUE DU CHILI, II, 2, Santiago, October, 1892.—The migratory locust of Chili, I. Bolivar. The question of the traveling cricket, F. Lataste. Notes on the Coleoptera of Chili,* P. Germain, figs. *Latrodectus formidabilis* of Chili; III. Pathological, F. P. Borne.

ABHANDLUNGEN DER NATURFORSCHENDEN GESELLSCHAFT ZU HALLE, xvii, 3 u. 4, 1892.—Historical development of the doctrine of parthenogenesis, Dr. O. Taschenberg.

MITTEILUNGEN AUS DEM OSTERLANDE.—Herausgegeben von der Naturforschenden Gesellschaft des Osterlandes zu Altenburg i. S.-A. Neue Folge, v, '92.—Corrections in the spider fauna of Brazil, Dr. E. A. Goeldi.

COMPTE RENDUS. SOCIETE DE BIOLOGIE, Paris, Dec. 10, 1892.—Zoological affinities of the Pantopodes, S. Jourdain.

GEOLOGICAL SURVEY OF CANADA.—Contributions to Canadian Paleontology. II. Canadian Fossil Insects; 2. The Coleoptera hitherto found fossil in Canada, S. H. Scudder, pp. 27-56, pls. ii, iii.

PROCEEDINGS OF THE ENTOMOLOGICAL SOCIETY OF WASHINGTON, ii, 3, Dec. 31, 1892.—On the morphology of the Ticks, Dr. G. Marx. On the discovery of the genus *Eunotus* in America, W. H. Ashmead. An insectivorous primrose, F. W. Mally. The hymenopterous parasites of spiders, L. O. Howard: 1 pl. On certain peculiar structures of Lepidoptera: 1. Radiate bodies in the receptaculum seminis of *Pronuba* and *Prodoxus*; 2. Pseudo-cenchri; 3. Tegulæ and patagia, C. V. Riley; figs. New species of Prodoxidæ, id, figs. Coleopterous larvæ with so-called dorsal pro-legs, id., figs. The evolution of heat by *Silvanus cassiæ*, E. W. Doran. Notes on the genus *Enicocephalus* Westw., and description of a new species from Utah, W. H. Ashmead. Notes on the Nearctic Aradidæ, Dr. E. Bergroth. Additional note on Nearctic Aradidæ, id. Food plants of the *Lixi*, F. M. Webster. Description of the larva of *Amphizoa LeConteï*, H. G. Hubbard, 1 pl. A note on the parasites of the Coccidæ, L. O. Howard. Notes on the Eucharids found in the United States, W. H. Ashmead.

BULLETIN OF THE AMERICAN MUSEUM OF NATURAL HISTORY, iv, 1, xv, New York, Dec. 27, 1892.—Catalogue of gall-producing insects [Hymenoptera, Diptera, Hemiptera, Arachnida] found within fifty miles of New York City, with descriptions of their galls and of some new species, W. Beutenmüller.

* Contains new species other than North American.

THE ENTOMOLOGIST'S RECORD, London, Dec. 15, 1892.—The genus *Acronycta* and its allies, Dr. T. A. Chapman, 1 pl. Seasonal variation of larvæ, R. Freer.

BIOLOGIA CENTRALI-AMERICANA, pt. civ, London, September, 1892.—Arachnida-Araneidea, O. P. Cambridge, pl. xii. Coleoptera, iv, pt. 2, pp. 401-448, pl. xix, G. C. Champion. Lepidoptera Heterocera, ii, pp. 97-112, pl. xlix, H. Druce.—Pt. cv, November, 1892. Arachnida-Araneidea, O. P. Cambridge, pl. xiii. Arachnida Acaridea, pp. 33-40, pl. xix, O. Stoll. Coleoptera, iv, pt. 1, pp. 477-524, G. C. Champion; iv, pt. 2, pl. xx, id. Lepidoptera Heterocera, ii, pp. 113-128, pls. l-lii, H. Druce. Rhynchota Heteroptera, pp, 353-368, W. L. Distant.

PROCEEDINGS OF THE AMERICAN ACADEMY OF ARTS AND SCIENCES (N. S.), xix, pp. 236-251, 1892.—The tropical faunal element of our southern Nymphalinæ systematically treated, S. H. Scudder.

ANALES DEL INSTITUTO FISICO-GEOGRAFICO Y DEL MUSEO NACIONAL DE COSTA RICA, III. San José de Costa Rica, 1892.—On the natural history of Costa Rica: I. Invertebrates collected and classified in 1889-91, H. Pittier.

BULLETIN DE LA SOCIETE PHILOMATHIQUE DE PARIS (8), iv, 3, 1892.—On the general process of tegumentary cuticularization in the larvæ of *Libellula*, J. Chatin. On the respiration of the larvæ of *Libellula*, J. Martin.

THE AMERICAN MONTHLY MICROSCOPICAL JOURNAL, Washington, December, 1892.—The grasshopper, *Oedipoda carolina;* an introductory study in zoology, H. L. Osborn.

THE CANADIAN ENTOMOLOGIST, London, Ont., January 1893.—Descriptions of four new West African butterflies, W. J. Holland. Some additions to the genus *Clisiocampa* Curt., B. Neumoegen. Description of a new *Tolype*, id. Can the Diptera be considered the highest insects? C. H. T. Townsend. A new arrangement of the Coleoptera, W. H. Patten. A general summary of the known larval food habits of the Acalyptrate Muscidæ, C. H. T. Townsend. Larvæ of *Papilio philenor* becoming larvophagous, Dr. R. E. Kunze. Synopsis of the Asilid genus *Anisopogon*, D. W. Coquillett. The larva and chrysalis of *Chrysophanus dione*, Dr. H. Skinner. Notes on *Zaræa americana* Cress., Rev. T. W. Fyles. A new form of *Prionia*, and notes on *Platypteryx arcuata* and *P. genicula*, G. H. Hudson. Female of *Crocota rosa* French, G. H. French. Honey Bee or House Fly, J. M. Aldrich. *Melanochroia cephise* Hüb., T. D. A. Cockerell. *Astatus bicolor* Say, C. A. Hart. *Halisidota macularia* Walk., H. G. Dyar.

PSYCHE, Cambridge, Mass., January, 1893.—An interesting blood-sucking gnat of the family Chironomidæ, C. H. T. Townsend, 1 pl. Descrip-

tions of new species and genera of West African Lepidoptera, W. J. Holland. On the species of the genus *Mirax* found in North America, W. H. Ashmead. Notes on the larval stages of *Arctia Blakei* Grote, H. G. Dyar.

NEW SPECIES OF NORTH AMERICAN INSECTS DESCRIBED IN THE PRECEDING LITERATURE.

ARACHNIDA.

Acarus serotinæ Beutenmüller, Bull. Am. Mus. N. H. iv, p. 378, pl. xvi, fig. 7. Acaridea: n. sp. Mex. and Cent. Am., Stoll, Biol. Cent.-Am. Arach. Acar. pp. 33-40, pl. xix.

COLEOPTERA.

One new genus, nine new species (fossil), Scudder, Geol. Survey Can. Paleon. II, pp. 27-56.

Heteromera: n. sp. Mex., Cent. Am., Champion, Biol. Cent.-Am. Coleop. iv, pt. 1, pp. 477-524; pt. 2, pp. 401-448.

DIPTERA.

Anisopogon ludius Coquillett, Can. Ent. xxv, p. 20, Cal., Brit. Col. *A. rubidus* p. 21, Cal. *A. patruelis*, p. 21, Tex.

Apomidas (near *Rhaphiomidas*) n. gen., *A. trochilus* n. sp. Coquillett, Can. Ent. xxiv, p. 315, Calif.

Cecidomyia clavula Beutenmüller, Bull. Am. Mus. N. H., iv, p. 269, pl. xv, fig. 5.

Sapromyza ocellaris Townsend, Can. Ent. xxiv, p. 303, N. Mex.

Tersesthes (n. gen. Chironomidæ) Townsend, Psyche, vi, p. 370. *T. torrens*, p. 371, N. Mex.

HEMIPTERA.

Aradus Duzeei Bergroth, Proc. Ent. Soc. Wash. II, p. 333, Pa., Ont. *A. concinnus*, p. 337, S. Calif.

Enicocephalus Schwarzii Ashm., Proc. Ent. Soc. Wash. II, p. 329, = *E.* (*Hymenodectes*) *culicis* Uhler, Trans. Md. Acad. Sci. 1892, Utah.

Heteroptera: n. sp. Mex., Cent. Am. Distant, Biol. Cent.-Am. Rhyn.-Heter. pp. 353-368.

HYMENOPTERA.

Cratæpus Fletcheri Ashmead, Can. Ent. xxiv, p. 309, Ottawa.

Cynipidæ: three n. sp. Beutenmüller, Bull. Am. Mus. N. H., iv, p. 247, 248, 257.

Eucharinæ: five n. sp. Ashmead, Proc. Ent. Soc. Wash. II, pp. 354-58.

Eunotus lividus Ashmead, Proc. Ent. Soc. Wash. II, p. 288, Ga.

Mirax: four n. sp. Ashmead, Psyche, vi, pp. 378-379.

New sp. of *Polysphincta*, *Pezomachus*, *Hemiteles*, *Eupelmus*, *Holcopelte*, *Mesocharis*, *Tetrastichus*, Howard, Proc. Ent. Soc. Wash. II, pp. 290-302.

LEPIDOPTERA.

Clisiocampa mus Neumoegen, Can. Ent. xxv, p. 4, Utah, Ariz. *C. azteca*, p. 5, Mex.

Eumelia for *Melia* Neum., Neumoegen, Can. Ent. xxv, p. 25.

Heterocera: n. sp. Mex., Cent.-Am., Druce, Biol. Cent.-Am. Lep. Het. II, pp. 97–128.

Prionia lævis Hudson, Can. Ent. xxv, p. 24, N. Y.

Prodoxus: five n. sp. (redescribed), Riley, Proc. Ent. Soc. Wash. II, pp. 312–319.

Tolype tolteca Neumoegen, Can. Ent. xxv, p. 6, Mex.

ORTHOPTERA.

Bacillus coloradus Scudder, Psyche, vi, p. 372, Col. *B. carinatus* id., Ariz., Mex.

The Entomological Section

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

PROCEEDINGS OF MEETINGS.

The following papers were read and accepted by the Committee for publication in ENTOMOLOGICAL NEWS:

NEW AFRICAN NYCTEMERIDÆ AND LIPARIDÆ.

By W. J. HOLLAND, Ph.D., Pittsburgh.

(Except when otherwise indicated, the species are all from the valley of the Ogove.)

NYCTEMERIDÆ.

NYCTEMERA Hüb.

1. **N. fallax** sp. nov. ♂.—Allied to *N. apicalis* Walk. and *N. leuconoe* Hopff. The front is white; the antennæ are black; the collar has on it two black spots narrowly margined with white; the tegulæ are black, narrowly margined with white; the top of the thorax is black, spotted with white; the upperside of the abdomen is uniformly gray; the underside of the thorax is white, profusely spotted with black spots; the underside of the abdomen is uniformly white, with two rows of narrow, linear, black spots upon either side; the extremity of the abdomen is tufted with orange hairs; the legs are pale orange; the primaries are white, semi-diaphanous, with the costal area near the base and the neurations blackish; the apex and outer margin are blackish; a subapical spot extends from the costa before the end of the cell nearly to the inner angle, and touches the outer margin above the submedian nervule; there are no white marks upon the outer border of the primaries below the apex; the

secondaries are translucent, with the costa and the outer margin black, the black border being narrow on the costa near the base, then widening rapidly to the outer angle, then still widening in width toward the anal angle, fading away near the inner margin, which is without a border. Expanse 45 mm.

This is a very distinct species, and may readily be distinguished from its near allies by the extreme translucency of the secondaries, and the absence of white spots upon the outer margin of the primaries below the apex as well as by the form of the subapical band.

AMNEMOPSYCHE Butl.

2. **A. incisa** sp. nov. ♂.—Antennæ black; front reddish orange; collar black. Body whitish. Legs white, with the femora narrowly edged with blackish; the primaries are yellowish white, tinged with orange-red at the base near the costa; the costa at the base is very narrowly edged with black, and this black border rapidly widens and covers the entire outer half of the wing; the inner edge of this black border is sharply cut into by the white basal area about the end of the cell above the second submedian and at the end of the first submedian. A large oval white spot interrupts the black apical area beyond the end of the cell; the secondaries are yellowish white, with the outer margin heavily black, the inner edge of this black margin being very irregularly and deeply cut into by the white area opposite the end of the cell; the underside is marked very much as the upperside. Expanse 35 mm.

GIRPA Walk.

3. **G. notata** sp. nov. ♂.—Allied to *G. circumdata* Walk., but larger, and with the black borders differently arranged. Head and antennæ black; collar rufous. Body black; the legs orange, margined with blackish; the underside of the abdomen orange; the primaries have the costa near the base and the outer half broadly black, the line dividing the outer black area running from beyond the middle of the cell diagonally outwardly to a point one-quarter of the distance from the outer angle upon the inner margin; the secondaries are broadly bordered with black, widest near the outer angle and narrower upon the inner margin; this outer black border is produced inwardly near the anal angle; the underside of the wings is much as the upperside. The female is marked much as the male, but with broader wings. Expanse: ♂, 35 mm.; ♀, 40 mm.

4. **G. cynocephala** sp. nov. ♂.—Head and antennæ black; collar fulvous; the upperside of the thorax and of the abdomen whitish, the latter narrowly annulated with black; the underside of the thorax is fulvous; the underside of the abdomen is whitish; the legs are black, margined with whitish; the primaries are black upon the costa and have the outer half broadly black; this broad black area is invaded by the white basal

area below the cell in such a manner as to rudely suggest the outline of a dog's head, a style of marking well known in the genus *Colias*. The secondaries are broadly black at the outer angle, the border growing rapidly narrower toward the extremity of the second submedian, then widening before the anal angle, which is marked by a black spot separated by a white line from the remainder of the border; the underside is as the upperside. The female is marked like the male, but larger. Expanse: ♂, 33 mm.; ♀, 38 mm.

This species is represented in my collection by specimens from the Upper Ogové and Old Calabar.

HYLEMERA Butl.

5. **H. tenera** sp. nov. ♂.—Antennæ blackish; front, collar and upperside of abdomen orange. Body and legs whitish; the wings, which are semi-diaphanous, are white on the basal half and black on the apical half, the inner edge of the black area being divided by a curved line running from before the middle of the costa to a point on the inner margin one-quarter of the distance from the other angle; the secondaries are narrowly tipped with black at the outer angle. Expanse 32 mm.

6. **H. indentata** sp. nov. ♀.—Body luteous; antennæ black. Wings white, very narrowly margined on the costa near the base with black, with the outer half broadly black, the inner margin of the black area being produced inwardly at the origin of the second median nervule; the secondaries are narrowly bordered with black from the end of the costa to the middle of the outer margin; the underside is as the upperside. Expanse 40 mm.

LIPARIDÆ.

GEODENA Walk.

7. **G. absimilis** sp. nov. ♂.—Antennæ yellow, with the pectinations black. Head and thorax bright orange. Abdomen pale orange, clouded with grayish near the thorax on the upperside; underside of thorax and abdomen orange-yellow. Legs of the same color margined with gray; the wings are white, with a large, round discal dot at the end of the cell; the primaries are heavily margined with blackish, the black border extending from the costa two-thirds of the distance from the base to the inner angle. Expanse 38 mm.

This species is quite distinct in general appearance from *G. quadriguttata* Walk., with the type of which I have compared it.

8. **G. dama** sp. nov. ♂.—Antennæ black; front orange; the upperside of the thorax and abdomen are grayish fawn; the lowerside of the thorax and abdomen are orange; the tip of the abdomen is dark brown. Legs fawn colored; the primaries are grayish fawn throughout with an oval dot

at the end of the cell; the secondaries are luteous, margined with pale fawn of the same color as the primaries and with a small round black dot at the end of the cell; upon the underside the primaries are as on the upperside, save that there is an orange basal ray near the costa, and that the inner margin is whitish; the secondaries are bright orange-yellow on the lower side with the outer margin darker than on the upperside. Expanse 32 mm.

SOLOE Walk.

9. **S. bigutta** sp. nov. ♂.—Allied to *S. trigutta* Walk., but without the discal dot on the posterior wing; the primaries are relatively broader and more rounded on the apex, the species is also smaller than *S. trigutta*; front orange; the thorax and the abdomen are tinged with luteous, and the legs are concolorous; the upperside of the wings is creamy-white; the primaries have two black dots in the cell, one near the middle and one near the end; the outer margin of the secondaries is slightly suffused with gray; on the underside the primaries are heavily clouded with slaty-gray upon the costa and at the apex, and the secondaries have the costal margin near the base slightly washed with yellow; the spot at the end of the cell of the primaries reappears upon the secondaries, and in some specimens there is a faint indication of a discal dot at the end of the cell of the primaries upon the underside. Female like the male. Expanse: ♂, 27 mm.; ♀, 30 mm.

This species may be distinguished from its allies by the markings as well as by the opacity of the wings. In *S. trigutta* Walk. and *S. tosola* Ploetz, the wings are semi-diaphanous.

CAVIRIA Walk.

10. **C. proxantha** sp. nov. ♂.—The antennæ have the culmen white, the setæ testaceous; the head, thorax and abdomen are yellowish white above and white beneath; the legs are concolorous; the primaries above are pale ochre-yellow, with the costa narrowly margined with light brown; the secondaries are pure white; the underside of both wings is pure white. Expanse 32 mm.

11. **C. nigripes** sp. nov. ♂.—Antennæ are as in the preceding species; the front orange; the thorax and abdomen are white; the legs are white, with the tibiæ and tarsi black; the wings are pure silvery white, opaque, with the costa of the primaries narrowly margined with black. Expanse 30 mm.

12. **C. xanthosoma** sp. nov. ♂.—The antennæ have the culmen whitish with the setæ pale gray; the entire body is bright yellow; the wings are creamy white tinged with luteous upon the costa of the primaries, which, together with the outer margin of the primaries, is very narrowly margined with brown. Expanse 40 mm.

13. **C. eximia** sp. nov. ♂.—Antennæ blackish; palpi white, edged below with black; front white; collar dark brown in front; the patagiæ have a dark brown spot upon the base; the body is white, with a faint grayish dorsal line, the thorax and abdomen below are yellowish white and the legs are uniformly of the same color; the primaries are creamy white with the costa very heavily margined with dark brown; the submedian and median nerves and the median and costal nervules near the outer margin are marked with brown; the hind wings are immaculate; the underside is pure white throughout. Expanse 45 mm.

REDOA Walk.

14. **R. Ogovensis** sp. nov. ♂.—Antennæ with the culmen white, the setæ gray; the front is orange, the body throughout white; the legs are orange; the wings throughout are pure silvery white, slightly laved with yellowish on the costa of the primaries below. Female like the male, but larger, and the wings more silvery. Expanse: ♂, 36 mm.; ♀, 58 mm.

SULYCHRA Butl.

15. **S. promelæna** sp. nov. ♂.—Antennæ and palpi black; front orange, with a black dot in the middle; the head is yellowish; the collar black; the patagiæ pale orange margined externally with black; the thorax is white, with two long suboval spots in the middle; the abdomen is whitish with the terminal segments banded laterally with blackish and with a ventral black line on either side uniting near the anus and enclosing a yellowish ventral area; the pectus is black; the underside of the thorax is the same color; the legs are black, slightly margined with pale gray; the wings are semi-diaphanous, the primaries smoky-brown, with the neurations darker brown; the secondaries are white, with the exterior margin clouded with brown. Expanse 55 mm.

16. **S. (?) flavescens** sp. nov. ♀.—The primaries have the costa convex and the apex produced, the outer margin excavated below the apex and the outer angle rounded; the palpi are black, margined with brown beneath; the antennæ are black; the front and the thorax above and below are grayish ferruginous; the abdomen is ferruginous, with a dorsal row of black spots and a lateral row of similar spots on either side; the primaries are grayish ferruginous, with a very faint transverse basal and a straight median transverse band succeeded by a very pale geminate submarginal band. All of these bands are pale smoky-brown; the neurations are dark brown; the secondaries are tawny, with the neuration dark brown. On the underside the wings are tawny, with the neurations brown; the primaries have a transverse brown line running from the costa to the radial, and some indistinct brownish cloudings near the outer margin; the secondaries have a similar series of markings near the outer angle. Expanse 55 mm.

I refer this species, with doubt, to the genus *Sulychra*, to

which, however, the structure of the cells and the neuration generally show it to be closely allied.

LEUCOMA Hüb.

17. **L. gracillima** sp. nov. ♂.—Antennæ with the culmen white, the pectinations gray; the palpi, the front, and the entire body with the legs luteous gray; the wings are whitish, translucent, with the costa and margins opaque white. Female like the male. Expanse: ♂, 32 mm.; ♀, 37 mm.

Hab.—Cape Lopez.

EXPLANATION OF PLATE III.

Fig. 1. *Amnemopsyche incisa* ♂, sp. nov.
" 2. *Girpa cynocephala* ♂, sp. nov.
" 3. *Girpa notata* ♂, sp. nov.
" 4. *Geodena dama* ♂, sp. nov.
" 5. *Geodena absimilis* ♂ sp. nov.
" 6. *Soloe bigutta* ♂, sp. nov.
" 7. *Hylemera tenera* ♂, sp. nov.
" 8. *Hylemera indentata* ♀, sp. nov.
" 9. *Leucoma gracillima* ♂, sp. nov.
" 10. *Nyctemera fallax* ♂, sp. nov.
" 11. *Sulychra promelæna* ♂, sp. nov.
" 12. *Redoa Ogovensis* ♂, sp. nov.
" 13. *Redoa Ogovensis* ♀, sp. nov.
" 14. *Caviria eximia* ♂, sp. nov.
" 15. *Caviria xanthosoma* ♂, sp. nov.

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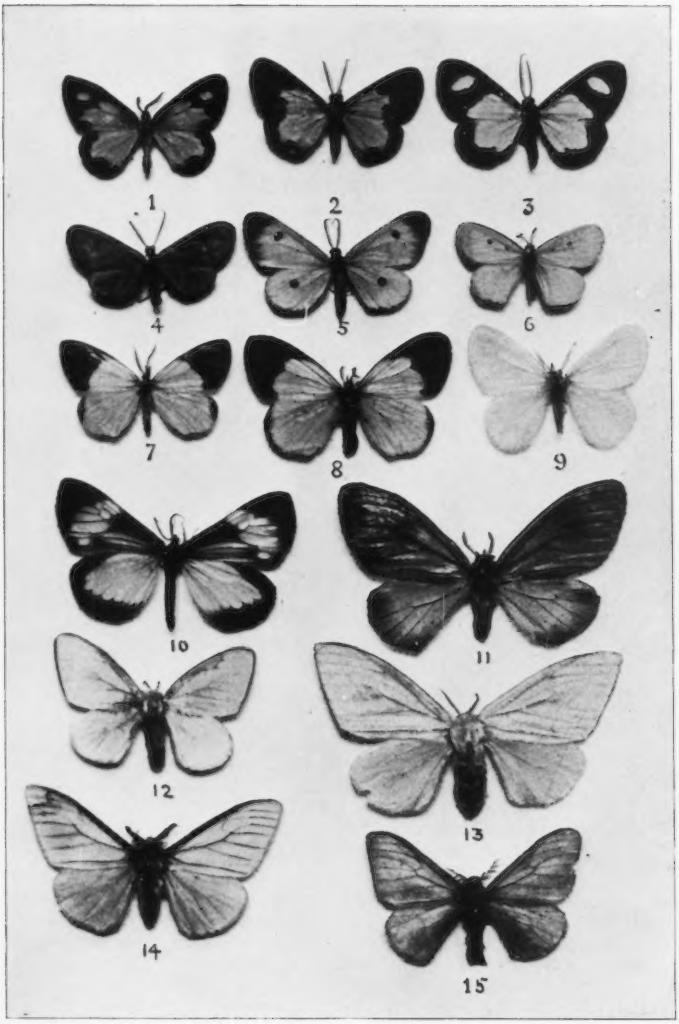
A NEW EUDAMUS.

By HENRY SKINNER, M. D., Philadelphia, Pa.

Eudamus Aemilea n. sp.—Male expands 1¼ inch., ♀ 1½ inch. Wings are a gray-brown, similar to *E. bathyllus*, yet when compared with the latter species there is a marked difference in color; yet it is almost impossible to describe in words. There is a somewhat lighter and grayer area in the middle of the secondaries of *æmilea*. Upperside: primaries. In three specimens there is a white dot near the outer end of the discoidal cell, and in two specimens there are two of these white spots; there is a crooked row of white spots running across the outer third of the wing from the costa nearly to the interior margin. First come the three nearly united spots which are present in so many species, then below these and urther toward the exterior margin are two others, the lower one of the two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points toward the tip of the wing; then further toward the base is another spot, and below this and still further toward the base is a spot made up apparently of two coalesced; below this and outward, nearer the exterior margin, is the last spot, which is usually square in shape. In one male the coalesced spot is nearly obsolete; the inferiors are immaculate. The wings are edged with a narrow black border, and the fringes are grayish; some of the hairs from the black border run through the fringes from the wings, giving the edge of the wings a scalloped appearance. Underside: the spots above are repeated beneath; the wings beneath are much lighter in color, and the inferiors have two black bands running across them.

This is a smaller species than *bathyllus*, and is a different color; it wants the inner costal spots found in *bathyllus* and *pylades*, and leaving out the inner costal and discal spots it has eight spots remaining, and none of the allied species have this many. That it is a new species is very apparent to the eye, but is one of those difficult things to picture in words. From five specimens, two males and three females, taken by Prof. Edw. T. Owen, at Fort Klamath, Oregon, I take pleasure in naming this species after the wife and eldest daughter of Prof. Owen.

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A NEW PAPIRIUS.

Plate IV.

By F. L. HARVEY, Orono, Me.

Papirius unicolor n. sp.—Light brownish purple throughout; color much like that of the *Delaware grape* with the bloom removed. Back, ends of the legs and apical half of the antennæ darker. Dorsum often with two interrupted stripes of darker shading. Head, base of antenna, base of legs, spring and ventral surface lighter; one specimen had the two terminal segments of the antennæ conspicuously clear. Young, half-grown specimens and full-grown specimens in damp situations paler. Occasionally a very large specimen and those taken in dry places, are more brown, but all show the purple tint; sides of the full-grown specimens often obscurely marked with paler oblong spots.

Body, including head, twice as long as broad; breadth and depth equal; gradually widening from the neck to the greatest breadth, abruptly narrowing with a slight re-entering angle to the conspicuous terminal segments.

Head, viewed from front, as long as broad; depth half the length.

Eye patches prominent, elevated black, conspicuous, bearing eight ocelli; four in the inner row, three in the outer, and a single smaller one

in the middle; the second ocellus from the front in the inner row is also smaller than the others; front of the head between the eyes elevated and bearing a tuft of long hairs.

Antennæ long, slender, elbowed at the second joint, nearly as long as the body; basal joint short, but slightly longer than the terminal; second joint shorter than third, the portion beyond the elbow usually somewhat longer than the two basal joints; third joint usually longest, the terminal half composed of seven or eight short sub-segments; terminal joint short conical, narrower than the club-shaped end of the third joint; composed of about ten sub-segments, the three basal of which are about the same width and obscure; fourth and fifth wider and well defined; sixth and seventh narrower and somewhat obscure; each segment bears a whorl of hairs, and, as there are three whorls on the portion beyond the seventh segment, probably it represents three more; when walking the basal portion of the antennæ is projected upward and outward from the head, the apical portion beyond the elbow outward and downward.

Legs long, claws prominent, the longer curved and bearing two teeth on its inner face below the middle; smaller claw slender over half the length of the other.

Suckers nearly as long as the body, cylindrical white, covered with papillæ; tentaculum cylindrical, prominent.

Spring rather long and slender, about three-fourths the length of the body; terminal segment less than half the length of the second, lanceolate, unarmed, concave below, and bearing on each edge of the concavity a row of about forty teeth; the teeth increase in size outward, and at the end join in a common tubercle.

Hairs are sparsely found on all parts of the body. Under a high power those on the second joint of the spring, which we especially examined, were barbellate.

Measurements made from live specimens:

(*a*) Total length 1.9 mm.; head, .8 mm. long, .8 mm. broad, .4 mm. deep from front to back; antennæ, 1.7 mm. long; joints in the ratio of 7: 22:25:6 nearly; body, 1.6 mm. long, .8 mm. broad, .9 mm. deep; spring, 1.06 mm. beyond body; segment in ratio of 5:6:2; tentaculum, .4 mm.; sucker, 1.5 mm.; hairs on back, .16 mm.; claw, .09 mm.

(*b*) Total length, 2.16 mm.; head, .8 mm. long, .8 mm. broad, .4 mm. deep; antennæ, 1.73 mm. long; segments in ratio of 2:7:10:2; body, 1.76 mm. long, 1.07 mm. broad, 1.07 mm. deep; last two segments of body, .4 mm.; spring, 1.52; segments in ratio of 8:8:3; beyond body, 1.04 mm.; sucker, 1.6 mm.; hairs, 1.6 on back and terminal segments; tentaculum, .4 mm.; claw, .1 mm. Other specimens were fully 2.5 mm. long.

Hab.—Under rubbish along the Penobscot from May to November. During the fall in the woods upon *agarics* and *boleti;* under the loose bark of stumps, also under boards and rubbish in meadows and pastures. We found them under boards as late

as November 8th, in this cold climate, after a snow of several inches had fallen. They no doubt hybernate in such situations. Common; more than a hundred specimens examined during 1891–92.

Orono, Me. F. L. Harvey.

Associated with *P. marmoratus* on *agarics* and *boleti;* under bark with the above and *Smynthurus 6-maculaa* Harvey; under rubbish with a large yellow *Smynthurus* n. sp. and half a dozen other *Thysanourans.*

Sluggish, slow-moving, but when disturbed can jump fully eight inches. The form, long legs, clumsy movements, and motion of the antennæ while walking, combine to give it a grotesque appearance.

Relationship.—Nearly the color of *P. fuscus* Lubbock, but differs in the form of the body, smaller terminal abdominal segments, structure of the antennæ, and much greater size.

Most like *Smynthurus novæboracensis* Fitch of the described American species. Agrees with it nearly in size and habitat, but differs in color, somewhat greater size, and structure of the antennæ. Specimens from the Nathan Banks collection, kindly sent us by Mr. Macgillevroy, have apparently but two joints beyond the elbow, and the third joint though, knotty at the end, seems to be entire. The form and color also seem different.

Critical remarks.—Lubbock, in his diagnosis of the genus *Papirius*, says there are only four joints to the antennæ. The figure of *P. fuscus*, given in his monograph, shows five (three beyond the elbow). Fitch overlooked the short basal joint in describing his *S. novæboracensis*, and regarded the portion beyond the elbow obscurely three-jointed. Packard, in his Essex Co. Catalogue, in describing *P. marmoratus*, first speaks of the third joint being broken into short segments. Lubbock says the third joint of *P. fuscus* appears knotty. The species we are considering has only the terminal half of the so-called third joint broken into short segments. It appears that there is great variability in the third joint from entire knotty forms, though others with the terminal half subjointed, to those with the entire joint broken into subjoints. If we did not know one form in structure stands between *P. fuscus* and *P. marmoratus* in the structure of the third antennal joint we would be *compelled* to regard the an

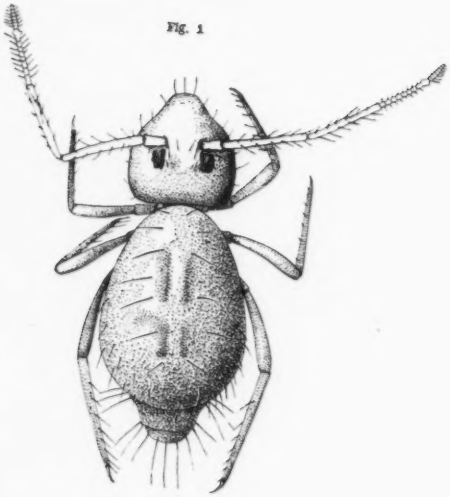
tennæ as broken into five well-defined regions. Are the species with the third joint broken into subjoints all American? An examination of our figures will show that they occupy, in structure, a position between *Papirius* and *Smynthurus*, for, if you coalesce the subjoints of the terminal and subterminal regions, the antennæ become four-jointed, with a long terminal joint broken into many sub-joints, that is, *Smynthurid.*

It is impossible to identify species from such meagre and general descriptions as that of *P. novæboracensis* Fitch, especially when not accompanied with drawings. It is equally hard to do so from alcoholic specimens of species soft bodied, and that shrivel and change color as do *Thysanourans.* Good drawings are essential.

Whether we err in referring this form to a new species can never be decided by the published description. The accompanying more detailed description and drawings will, we hope, serve a better purpose. The drawings were made by Mr. J. H. Emerton, under the direction of the writer. Fig. 1 shows the ocelli accurately drawn. Fig. 2 shows one of the suckers extended. Fig. 3, side view.

ENTOMOLOGICAL NEWS for January was mailed December 30, 1892.

Fig. 1



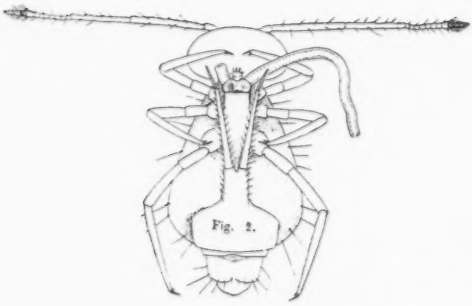


Fig. 2.

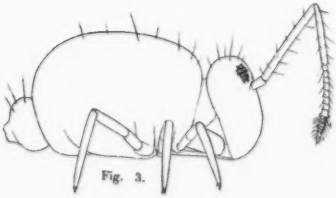


Fig. 3.

PAPIRIUS UNICOLOR Harvey.